March 10th, Monday

9:00-9:15 Opening Address

9:15-10:35 Plenary Talks

9:15-9:55

Mo-1 D.D. Awschalom (Invited); *University of California, Santa Barbara*
"Manipulating Electron and Nuclear Spins in Semiconductor Nanostructures"

9:55-10:35

Mo-2 K.H. Ploog (Invited); *Paul Drude Institute for Solid State Electronics*
"Ferromagnet-Semiconductor Heterostructures for Spin Injection at Room Temperature"

10:35-11:00 Coffee Break (25 min.)

11:00-12:10 Nano-Materials

11:00-11:30

Mo-3 John F. Ryan (Invited); *University of Oxford*
"From Physics and Biology to Nanotechnology"

11:30-11:50

Mo-4 Kazuhiko Matsumoto;
National Institute of Advanced Industrial Science & Technology (AIST), University of Tsukuba, CREST
"Single Electron Transistor using Carbon Nanotube Channel"

11:50-12:10

Mo-5 Ane Jensen, Jesper Nygard, Jørn Borggreen, Jørn Bindslev Hansen, Poul Erik Lindelof; *Ørsted Laboratory, Niels Bohr Institute, University of Copenhagen*
"Single-Wall Carbon Nanotube Quantum Dots with Ferromagnetic Contacts"

12:10-13:30 Lunch (80 min.)

13:30-16:00 Heterostructures and Spintronics

13:30-14:00

Mo-6 C. Ciuti[1], J. P. McGuire[1], Pochung Chen[2], C. Piermarocchi[3], D.G. Steel[4], L. J. Sham[1] (Invited);
[1]*University of California San Diego*, [2]*University of California, Berkeley*, [3]*Michigan State University*, [4]*University of Michigan*
"Theory of Spin Polarization Generation and Control in A Semiconductor"

14:00-14:30

Mo-7 Mark Johnson (Invited); *Naval Research Laboratory*
"Electrical Spin Injection and Detection in an InAs 2DEG"

14:30-15:00
Mo-8 Bart J. van Wees (Invited); *University of Groningen*
"Spin Injection, Spin Transport and Spin Manipulation in Mesoscopic Ferromagnet/Metal Systems"

15:00-15:20
Mo-9 Christos Flytzanis[1], Robert Frey[2], Fredrik Jonsson[3];
[1]*Lab. Physique de la Matière Condensée, Ecole Normale Superieure*, [2]*Lab. Charles Fabry, Institut d'Optique*, [3]*Dept. Physics, Royal Institute of Technology*
"Magnetophotonic Microcavities and Gratings. Nonlinear Interactions and Photoinduced Spin Organization"

15:20-15:40
Mo-10 Junsaku Nitta[1,2], Takaaki Koga[1,3];
[1]*NTT Basic Research Laboratories*, [2]*CREST*, [3]*PRESTO*
"Gate Control of Spin and Spin Interference in Semiconductors"

15:40-16:00
Mo-11 K. Hirakawa[1,2], Y. Shimada[1], S. Madhavi[1,2];
[1]*Institute of Industrial Science, University of Tokyo*, [2]*CREST*
"Bloch Oscillations and Inversionless Gain in Semiconductor Superlattices"

16:00-19:00 **Poster Session I** (with Sandwiches, Snacks and Beverages)

Poster Session I Presentations:

PMo-1 Eugen Onac[1], Richard Deblock[1,2], Leonid Gurevich[1], L.P. Kouwenhoven[1];
[1]*Delft University of Technology*, [2]*University Paris-Sud*
"SIS Detection of the Emission of a Cooper Pair Box"

PMo-2 Andreas Richter[1,3], Yuichi Harada[1,3], Hiroyuki Tamura[1,3], Tatsushi Akazaki[1,3], Tadashi Saku[2], Yoshiro Hirayama[1], Hideaki Takayanagi[1,3];
[1]*NTT Basic Research Laboratories*, [2]*NTT Advanced Technology Corporation*, [3]*CREST*
"Field-induced Semiconductor Quantum Dots Defined by a Single Metallic Front-gate"

PMo-3 Satoshi Sasaki[1], Shinichi Amaha[2], Naoki Asakawa[2], Seigo Tarucha[1,2,3];
[1]*NTT Basic Research Laboratories*, [2]*University of Tokyo*, [3]*Mesoscopic Correlation Project, ERATO, JST*
"Singlet-Triplet and Doublet-Doublet Kondo Effect in an Artificial Atom"

PMo-4 Mikio Eto, Takashi Ashiwa, Mikio Murata; *Keio University*
"Entanglement of Nuclear Spins in Quantum Dots in Spin-Blockade Region"

PMo-5 Kiyoshi Tamaki, Masato Koashi, Nobuyuki Imoto;
CREST Research Team for Interacting Carrier Electronics, The Graduate University for Advanced Studies (SOKEN-DAI)
"Unconditionally Secure Key Distribution Based on Two Nonorthogonal States"

PMo-6 Yasuhito Kawano[1], Yasuhiro Takahashi[1], Shigeru Yamashita[1,2], Masahiro Kitagawa[1,3,4];
[1]*NTT Communication Science Laboratories*, [2]*Quantum Computation and Information, ERATO (JST)*, [3]*CREST*, [4]*Osaka University*
"Explicit Implementation of Quantum Computers on a Unidirectional Periodic Structure"

PMo-7 Takashi Yamamoto[1,2], Masato Koashi[1,2], Sahin Kaya Ozdemir[1,2], Nobuyuki Imoto[1,2,3];
[1]*The Graduate Univirsity for Advanced Studies, SOKEN-DAI*, [2]*CREST*, [3]*NTT Basic Research Laboratories*
"Experimental Extraction of an Entangled Pair from Decohered Photon Pairs"

PMo-8 M. Murakami[1], Y. Matsumoto[1], M. Nagano[1], T. Hasegawa[1,2], T. Chikyow[2], K. Ando[3], M. Kawasaki[2,4], H. Koinuma[1,2,5];
[1]*Tokyo Institute of Technology*, [2]*National Institute for Materials Science-Combinatorial Materials Exploration and Technology*, [3]*National Institute of Advanced Industrial Science and Technology (AIST)*, [4]*Tohoku University*, [5]*CREST*
"Structural and Magnetic Characterizations of Room Temperature Ferromagnetic Co Doped TiO_2 Thin Films Fabricated by Combinatorial Laser Molecular Beam Epitaxy"

PMo-9 Yoshikata Nakajima, Kenichi Aoto, Hideki Tomita, Tatsuro Hanajiri, Toru Toyabe, Takitaro Morikawa, Takuo Sugano;
Bio-Nano Electronics Research Center, Toyo University
"Confirmation of Energetic Localization of Traps in Low-dose SIMOX Wafers"

PMo-10 Isamu Hatakeyama, Sakae Chida, Yoshio Jinbo, Naotaka Uchitomi;
Nagaoka University of Technology
"Influence of Thermal Processing on Transport Properties in $Ga_{1-x}Mn_xAs$"

PMo-11 Ikuzo Kanazawa; *Tokyo Gakugei University*
"Localization Mechanism and Lagrange Formulation in Diluted Magnetic Semiconductors"

PMo-12 Kiyoshi Kanisawa[1], Yasuhiro Tokura[1], Hiroshi Yamaguchi[1], Yoshiro Hirayama[1,2];
[1]*NTT Basic Research Laboratories*, [2]*CREST*
"Scanning Tunneling Spectroscopy Study of Zero-Dimensional States in InAs Nanostructures"

PMo-13 Atsushi Yokoo; *NTT Basic Research Laboratories*
"Nano-patterning of Si by Nanoelectrode Lithography"

PMo-14 Kenji Shiraishi[1,2], Susumu Okada[1,2], Atsushi Oshiyama[1,2];
[1]*Universtity of Tsukuba*, [2]*Research Consortium for Synthetic Nano-Function Materials Project (SYNAF), National Institute of Advanced Industrial Science and Technology (AIST)*
"Design of High-Spin States Based on Si Dangling Bond Networks"

PMo-15 J.G.S. Lok, M. Lynass, S. Kraus, W. Dietsche, K. von Klitzing, M. Hauser;
Max-Planck-Insitut für Festkörperforschung
"Quantum Hall Ferromagnetism of AlAs 2D Electrons"

PMo-16 K. Hashimoto[1,2], K. Muraki[2], T. Saku[3], Y. Hirayama[1,2];
[1]*CREST*, [2]*NTT Basic Research Laboratories*, [3]*NTT-Advanced Technology*
"Suppression of the Interaction between Nuclear Spins and the Fractional Quantum Hall State by the Confinement Potential Asymmetry"

PMo-17 N. Kumada[1], K. Tagashira[1], K. Iwata[1], A. Sawada[1], Z. F. Ezawa[1], K. Muraki[2], T. Saku[2], Y. Hirayama[2];
[1]*Tohoku University*, [2]*NTT Basic Research Laboratories*
"Energy Levels in Bilayer Systems under Perpendicular and In-Plane Magnetic Fields"

PMo-18 K. Takashina[1], R.J. Nicholas[1], N.J. Mason[1], D.K. Maude[2], J.C. Portal[2,3,4];
[1]*Clarendon Laboratory*, *University of Oxford,* [2]*GHMFL, MPI-FKF/CNRS*, [3]*INSA*
"Edge Conduction in Insulating States of a Broken-Gap 2-D Electron-Hole System"

PMo-19 G. Yusa[1], K. Muraki[1], T. Saku[2], Y. Hirayama[1,3];
[1]*NTT Basic Research Laboratories*, [2]*NTT-Advanced Technology*, [3]*CREST*
"Transport Properties of Coupled Quantum Wires in the Magnetic Field"

PMo-20 Satoshi Kokado, Kikuo Harigaya;
National Institute of Advanced Industrial Science and Technology (AIST)
"Theoretical Investigation on Magnetic Tunnel Junctions with 4-Valued Conductances"

PMo-21 Takaaki Koga[1,2], Junsaku Nitta[2,3], Marc van Veenhuizen[2];
[1]*PRESTO*, [2]*NTT Basic Research Laboratories*, [3]*CREST*
"Ballistic Spin Interferometer using a Square Loop Array"

PMo-22 Ali A. Yanik, Magnus Paulsson, Eric Polizzi, Supriyo Datta; *Purdue University*
"Spin-Current Modulation by Rashba Spin-Precession in Realistic Structures"

PMo-23 Yoshihiro Shimazu, Takeyoshi Nakano; *Yokohama National University, CREST*
"Continuous Measurement of Magnetic Flux of Two Qubits with Josephson Junctions Coupled through Mutual Inductance"

March 11th, Tuesday

9:00-10:00 Nano-Wires

9:00-9:30
Tu-1 Lars Samuelson (Invited); *Lund University*
"Nanoscale One-Dimensional Materials and Devices"
9:30-10:00
Tu-2 Silvano De Franceschi (Invited); *Delft University of Technology*
"Quantum Electronics with Semiconductor Nanowires"

10:00-10:30 Coffee Break (30 min.)

10:30-12:30 Spin and Nuclear Spin Related Phenomena

10:30-11:00
Tu-3 J.G.S Lok, S. Kraus, O. Stern, W. Dietsche (Invited);
Max-Planck-Institut für Festkörperforschung
"Current Induced Nuclear Spin Polarisation in the FQHE Regime"

11:00-11:30
Tu-4 Robert H. Blick (Invited); *Ludwig-Maximilians-Universität*
"Coupling Electron Spins to Nuclear Moments in Quantum Dots"

11:30-12:00
Tu-5 Daniel Loss (Invited); *University of Basel*
"Spin Orbit Effects in Transport and Noise in Nanostructures"

12:00-12:20
Tu-6 Keiji Ono[1,2], Seigo Tarucha[1,2]; [1]*University of Tokyo*, [2]*CREST, JST*
"All-Electrical Nuclear Spin Manipulation in Quantum Dot"

12:20-12:40
Tu-7 Toshimasa Fujisawa; *NTT Basic Research Laboratories*
"Inelastic Spin Relaxation in a Quantum Dot in the Coulomb Blockade Regime"

12:40-14:00 Lunch (80 min.)

14:00-15:20 Nanomechanics and Nanoprobing

14:00-14:30
Tu-8 A. N. Cleland (Invited); *University of California, Santa Barbara*
"Measuring Mechanical Structures with Tunnel Junctions, Single-Electron Transistors, and Quantum Point Contacts"

14:30-15:00
Tu-9 M. Morgenstern (Invited); *Hamburg University*
"Towards Spin Polarized Imaging of Ferromagnet-Semiconductor Interfaces"

15:00-15:20

Tu-10 Takashi Tokizaki[1,2], Hiroshi Yokoyama[1,2];
[1]*National Institute of Advanced Industrial Science and Technology (AIST)*, [2]*CREST*
"Microscopic Observation of Carrier Diffusion in GaAs Quantum Structures under Magnetic Fields"

15:20-15:40 Coffee Break (20 min.)

15:40-16:40 Quantum Information Processing Ⅰ

15:40-16:10

Tu-11 Yoshihisa Yamamoto[1,2], Charles Santori[1], David Fattal[1], Glenn S. Solomon[1], Jelena Vuckovic[1], Edo Waks[1], Kyo Inoue[2] (Invited);
[1]*Quantum Entanglement Project, ICORP, JST, Stanford University*, [2]*NTT Basic Research Laboratories*
"Single Photons and Entangled Photons from a Quantum Dot"

16:10-16:40

Tu-12 Yasunobu Nakamura[1,2], Irinel Chiorescu[2], C.J.P.M. Harmans[2], J.E. Mooij[2] (Invited);
[1]*NEC Fundamental Research Laboratories*, [2]*Technical University Delft and Delft Institute for Micro and Submicron Technology (DIMES)*
"Coherent Control of a Superconducting Flux Qubit"

16:40-17:00

Tu-13 Yuri Pashkin[1], Tsuyoshi Yamamoto[1,2], Oleg Astafiev[1], Yasunobu Nakamura[1,2], Dmitri Averin[3], Jaw-Shen Tsai[1,2];
[1]*The Institute of Physical and Chemical Research*, [2]*NEC Fundamental Research Laboratories*, [3]*SUNY Stony Brook*
"Quantum Oscillations in Two Coupled Charge Qubits"

17:00-17:50 Quantum Hall Effects

17:00-17:30

Tu-14 A. Sawada, N. Kumada, Z.F. Ezawa (Invited); *Tohoku University*
"Interacting Composite Fermions in Bilayer Fractional Quantum Hall Effect"

17:30-17:50

Tu-15 M. P. Schwarz[1], D. Grundler[1], Ch. Heyn[1], D. Heitmann[1], D. Reuter[2], A. Wieck[2];
[1]*Universität Hamburg*, [2]*Ruhr-Universität Bochum*
"Non-Equilibrium and Equilibrium Magnetization of Lateral Dot and Antidot Arrays in the Quantum Hall Regime"

18:30-20:30 Banquet (No Extra Charge, at Atsugi Royal Park Hotel)

March 12th, Wednesday

9:00-10:10 Andreev Reflection and Proximity Effects

9:00-9:30

We-1 Venkat Chandrasekhar (Invited); *Northwestern University*
"Thermopower in Andreev Interferometers: Supercurrents and Persistent Currents"

9:30-9:50

We-2 Boris E. Nadgorny; *Wayne State University*
"Andreev Reflection Spin Spectroscopy in Dilute Magnetic Semiconductors"

9:50-10:10

We-3 Branislav K. Nikolic[1], J. K. Freericks[2], P. Miller[3];
[1]*University of Delaware*, [2]*Georgetown University*, [3]*Brandeis University*
"Proximity Effect in Strongly Correlated Nanostructures"

10:10-13:00 Poster Session Ⅱ (with Coffee and Lunch)

13:00-13:40 Quantum Information Processing Ⅱ

13:00-13:20

We-4 Nobuyuki Imoto;
The Graduate University for Advanced Studies (SOKEN-DAI), NTT Basic Research Laboratories, CREST
"Multi-Qubit Operation with Linear Interactions and State Reduction"

13:20-13:40

We-5 Yoshiro Hirayama; *NTT Basic Research Laboratories, CREST*
"Semiconductor Qubits"

13:40-15:30 Diluted Magnetic Semiconductors

13:40-14:10

We-6 Allan H. MacDonald (Invited); *University of Texas at Austin*
"Magnetic and Transport Properties of (III,Mn)V Ferromagnetic Semiconductors"

14:10-14:40

We-7 Hiroo Munekata (Invited); *Tokyo Institute of Technology*
"Experimental Results on Manipulation of Ferromagnetically Coupled Spins with Light in III-V Ferromagnetic Semiconductors"

14:40-15:10

We-8 L. W. Molenkamp (Invited); *Physikalisches Institut der Universität Würzburg*
"Spin Injection and Detection in Semiconductors"

15:10-15:30

We-9 S. Katsumoto, N. Goto, Y. Hashimoto, Y. Iye;
Institute for Solid State Physics, University of Tokyo
"Injection of Spin Polarized Holes from a Diluted Magnetic Semiconductor (Ga,Mn)As to a Two-Dimensional Hole System"

15:30-15:40 Closing Address

Poster Session Ⅱ Presentations:

PWe-1 Junko Usukura[1], Dai Hirashima[2]; [1]*Tokyo University of Science*, [2]*Nagoya University*
"Spin State of Few-Electron System in Quantum Ring"

PWe-2 Frank Deppe[1,2], Shiro Saito[1,3], Hirotaka Tanaka[1,3], Hideaki Takayanagi[1,3];
[1]*NTT Basic Research Laboratories*, [2]*Walther-Meissner-Institute*, [3]*CREST*
"Capacitance Estimation of nm-Scale Josephson Junctions"

PWe-3 T. Hayashi[1], T. Fujisawa[1], H. D. Cheong[3], Y. H. Jeong[3], Y. Hirayama[1,2];
[1]*NTT Basic Research Laboratories*, [2]*CREST*, [3]*Pohang University of Science and Technology*
"Coherent Oscillation of an Electric Dipole in a Double Quantum Dot"

PWe-4 W.G. van der Wiel[1], F. Nakajima[2], S. Teraoka[3,4], T. Kodera[3], J. Motohisa[2], T. Fukui[2], S. Tarucha[3,4];
[1]*PRESTO, JST, University of Tokyo, Delft University of Technology*, [2]*Research Center for Integrated Quantum Electronics, Hokkaido University*, [3]*University of Tokyo*
"Single-Electron Spin Manipulation in Quantum Dots"

PWe-5 M. Stopa[1], W. van der Wiel[2], S. De Franceschi[3], S. Tarucha[4], L. Kouwenhoven[3];
[1]*ERATO-JST*, [2]*PRESTO-JST, University of Tokyo, Delft University of Technology*, [3]*ERATO-JST, Delft University of Technology*, [4]*ERATO-JST, University of Tokyo*
"Magnetically Induced Chessboard Pattern in the Conductance of a Kondo Quantum Dot"

PWe-6 Minkyung Jung[1], Seung-Woong Lee[1], Kazuhiko Hirakawa[1,2];
[1]*Institute of Industrial Science, University of Tokyo*, [2]*CREST*
"Lateral Single Electron Transistors using InAs Self-Assembled Quantum Dots"

PWe-7 S. Nomura[1,2,3], Y. Aoyagi[2,3];
[1]*University of Tsukuba*, [2]*Institute of Physical and Chemical Research*, [3]*CREST, JST*
"Photoluminescence Spectroscopy Applied for Detecting Spin Polarization of Electrons in Quantum Dot Arrays"

PWe-8 Toshifumi Itakura[1], Akira Kawaguchi[1,2], Norio Kawakami[2], Yasuhiro Tokura[1];
[1]*NTT Basic Research Laboratories*, [2]*Osaka University*
"Dephasing of a Spin Qubit Coupled to a Spin Chain with Long-Range Interactions"

PWe-9 Şahin Kaya Özdemir, Takashi Yamamoto, Yu-xi Liu, Masato Koashi;
CREST Research Team for Interacting Carrier Electronics, School of Advanced Sciences, The Graduate University for Advanced Studies (SOKEN-DAI)
"Performance of Quantum Nonlinear Sign Change Gates"

PWe-10 Marcus Steiner[1,2], Junsaku Nitta[1,3];
[1]*NTT Basic Research Laboratories*, [2]*University of Hamburg*, [3]*CREST*
"Strayfield Investigation and Numerical Simulations of Microstructured Permalloy Rings"

PWe-11 Shingo Ohtsuka, Susumu Kurihara; *Waseda University*
"Excitation Spectrum in Spinor Bose-Einstein Condensates"

PWe-12 Issei Satoh, Takeshi Kobayashi, Takanori Okada, Tadashi Itoh; *Osaka University*
"Magneto-Photoluminescence of $Zn_{1-x}Cr_xO$; Comparison of Experiments and Simulation"

PWe-13 Masao Takahashi; *Kanagawa Institute of Technology*
"Double-Exchange-Like Mechanism in a Magnetic Impurity Band of III-V-Based Diluted Magnetic Semiconductor"

PWe-14 Satofumi Souma, Seung Joo Lee, Tae Won Kang; *Dongguk University*
"Multi-Subband Theory of Ferromagnetism in GaMnAs Quantum Wells"

PWe-15 Hiroshi Yamaguchi[1], Sen Miyashita[2], Yoshiro Hirayama[1,3];
[1]*NTT Basic Research Laboratories*, [2]*NTT Advanced Technology*, [3]*CREST*
"Piezoresistivity in InAs/AlGaSb Heterostructures"

PWe-16 K. Muraki[1,2], J.G.S. Lok[1], S. Kraus[1], W. Dietsche[1], K. von Klitzing[1], D. Schuh[3], M. Bichler[3], W. Wegscheider[3];
[1]*Max-Planck-Institut für Festkörperforschung*, [2]*NTT Basic Research Laboratories*, [3]*Walter-Schottky-Institut, Technische Universtät München*
"Interplay of Disorder, Screening, and Exchange Interactions in the Quantum Hall Systems Probed via Coulomb Drag"

PWe-17 D. Terasawa[1], N. Kumada[1], M. Morino[1], K. Tagashira[1], A. Sawada[1], Z.F. Ezawa[1], K. Muraki[2], T. Saku[2], Y. Hirayama[2];
[1]*Tohoku University*, [2]*NTT Basic Research Laboratories*
"Charged Excitation Compounded with Spins and Pseudospins in the Bilayer ν= 1 Quantum Hall State"

PWe-18 Kyocihi Suzuki[1], Sen Miyashita[2], Kei Takashina[1], Yoshiro Hirayama[1,3];
[1]*NTT Basic Research Laboratories*, [2]*NTT Advance Technology Corporation*, [3]*CREST*
"Boundaries of Quantum Hall Effect in InAs/GaSb Electron-Hole Systems"

PWe-19 Y. Lin[1], J. Nitta[1,2], T. Koga[1,3], T. Akazaki[1,2];
[1]*NTT Basic Research Laboratories*, [2]*CREST*, [3]*PRESTO*
"Electronic g* Factor in Gated $In_{0.53}Ga_{0.47}As/In_{0.52}Als_{0.48}As$ Heterostructures with InAs-Inserted Wells"

PWe-20 Takeshi Inoshita[1], Seigo Tarucha[1,2,3];
[1]ERATO, JST, [2]CREST, JST, [3]University of Tokyo
"Theory of Hyperfine-Induced Current Instability in Double Quantum Dots in the Spin Blockade Regime"

PWe-21 Teppei Onuki[1,2], Takashi Tokizaki[3], Hiroshi Yokoyama[1,3];
[1]*National Institute of Advanced Industrial Science and Technology (AIST)*, [2]*Tokyo University of Science*, [3]*CREST*
"Spatial and Temporal Observation of Photocarrier Diffusion in Two-Dimensional Electron Systems under Magnetic Fields"

PWe-22 H. Yokoyama[1], T. Sato[2], K. Ono[1,3], Y. Hirayama[3,4], S. Tarucha[1,3,4];
[1]*University of Tokyo*, [2]*ERATO Mesoscopic Correlation Project*, [3]*CREST-JST*, [4]*NTT Basic Research Laboratories*
"Transport Properties of a Quantum Wire with a Tunable Double Potential Barrier"

PWe-23 Soichiro Teraoka[1], Aihiko Numata[2], Shin-ichi Amaha[2], Keiji Ono[2,3], Seigo Tarucha[2,3]; [1]*ERATO Mesoscopic Correlation Project*, [2]*University of Tokyo*, [3]*CREST*
"Electron Spin Resonance and Nuclear Spin Pumping in 2DEG Quantum Hall System"

PWe-24 Vladimir Yudson[1,2];
[1]*Chiba University,* [2]*Institute for Spectroscopy Russian Academy of Science*
"Kinetics of Electrons in Pumped Mesoscopic Samples"